The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

1.   A method for classifying plant embryo quality comprising:

(a)   developing a single metric classification model by

(i)   acquiring raw digital image data of reference samples of whole plant embryos or any portion thereof from plant embryos of known embryo quality;

(ii)   calculating a metric value from the acquired raw digital image data of each embryo of known embryo quality;

(iii)   dividing the metric values obtained in step (a)(ii) into two sets of metric values according to their known embryo quality;

(iv)   calculating a Lorenz curve from the two sets of metric values;

(v)   using any point on the Lorenz curve calculated in step (a)(iv) as a threshold value to arrive at a single metric classification model for classifying plant embryos by embryo quality;

(b)   acquiring raw digital image data of a whole plant embryo or any portion thereof from a plant embryo of unknown embryo quality; and

(c)   applying the developed single metric classification model to the raw digital image data of step (b) in order to classify the quality of the plant embryo of unknown embryo quality.

2.   A method according to Claim 1 wherein two or more single metric classification models derived from different metrics are combined using one or more classification algorithms to develop a classification model for classifying plant embryos by embryo quality.

3.   A method according to Claim 1, wherein the raw digital image data acquired in step (a)(i) is preprocessed using one or more preprocessing algorithms before step (a)(ii); the raw digital image data acquired in step (b) is preprocessed using one or more preprocessing algorithms; and step (c) is carried out using the preprocessed raw digital image data.

4.   A method according to Claim 3, wherein the preprocessing algorithm removes raw image data that is not from the plant embryo or plant embryo organ.

5.   A method according to Claim 3, wherein the preprocessing algorithm reduces the amount of raw image data.

6.   A method according to Claim 1 wherein the raw digital image data is acquired from more than one view of the plant embryo or plant embryo organ.

7.   A method according to Claim 1 wherein the plant embryo quality is morphology.

8.   A method according to Claim 1 wherein the plant embryo quality is embryo conversion potential.

9.   A method according to Claim 1 wherein the plant embryo is a plant somatic embryo.

10.   A method according to Claim 9 wherein the plant is a tree.

11.   A method according to Claim 10 wherein the tree is a member of the order *Coniferales*.

12.   A method according to Claim 10 wherein the tree is a member of the family *Pinaceae*.

13.   A method according to Claim 10 wherein the tree is selected from the group consisting of genera *Pseudotsuga* and *Pinus*.